United States Patent [19]

Lipes

[11] **4,253,292**

[45] **Mar. 3, 1981**

[54] **AUTOMATIC WEIGHING AND BAGGING MACHINE**

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[21] Appl. No.: **47,697**

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Related U.S. Application Data

[63] Continuation-in-part of Ser. No. 852,678, Nov. 18, 1977, Pat. No. 4,172,349.

[51] **Int. Cl.**[3] **B65B 1/32;** B65B 43/30

[52] **U.S. Cl.** **53/502;** 53/506; 53/572; 53/384; 53/385; 177/118

[58] **Field of Search** 53/459, 572, 502, 506, 53/570, 571, 384, 385; 141/83; 177/118, 160, 56, 59, 114, 106

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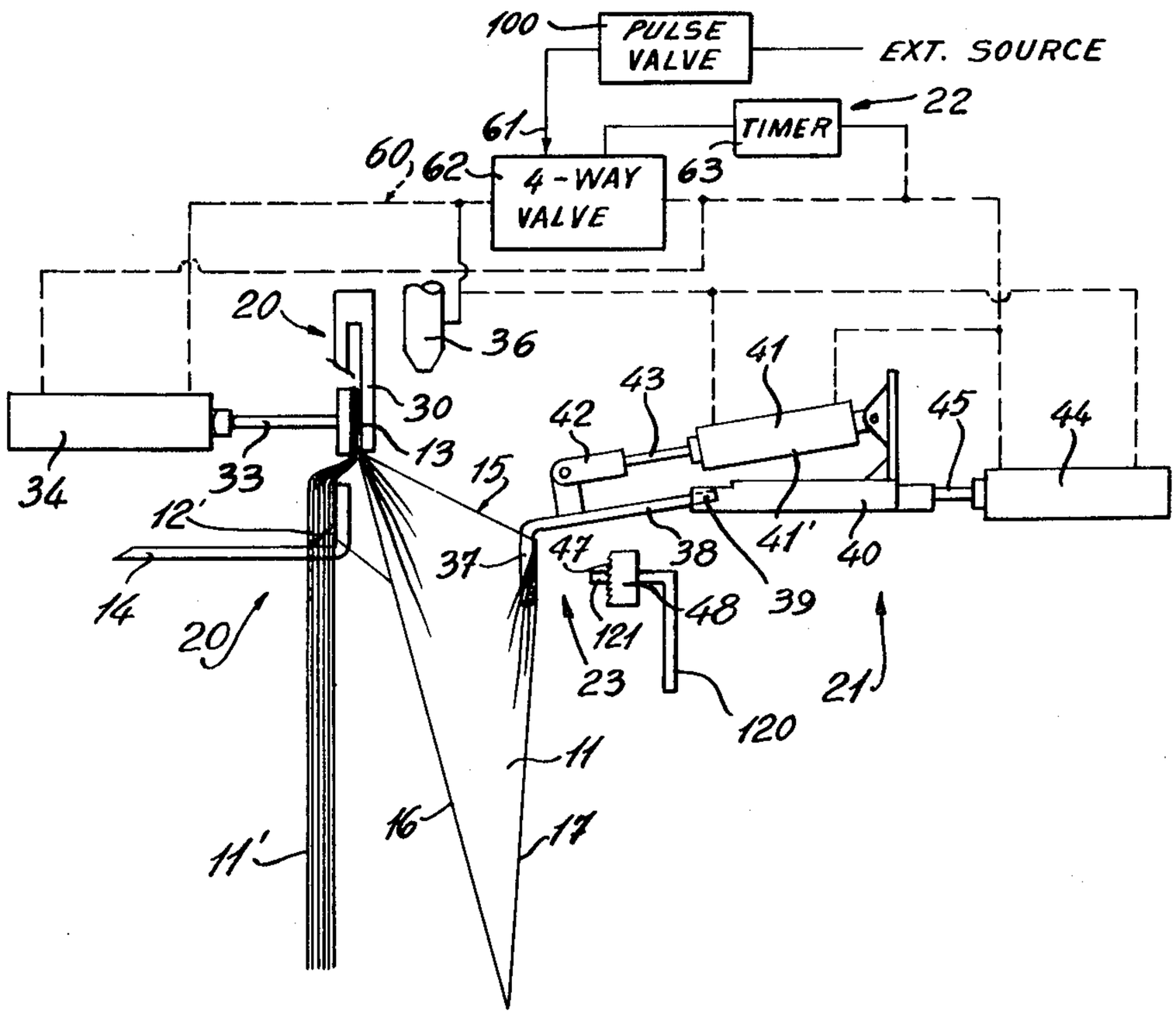
Primary Examiner—Travis S. McGehee

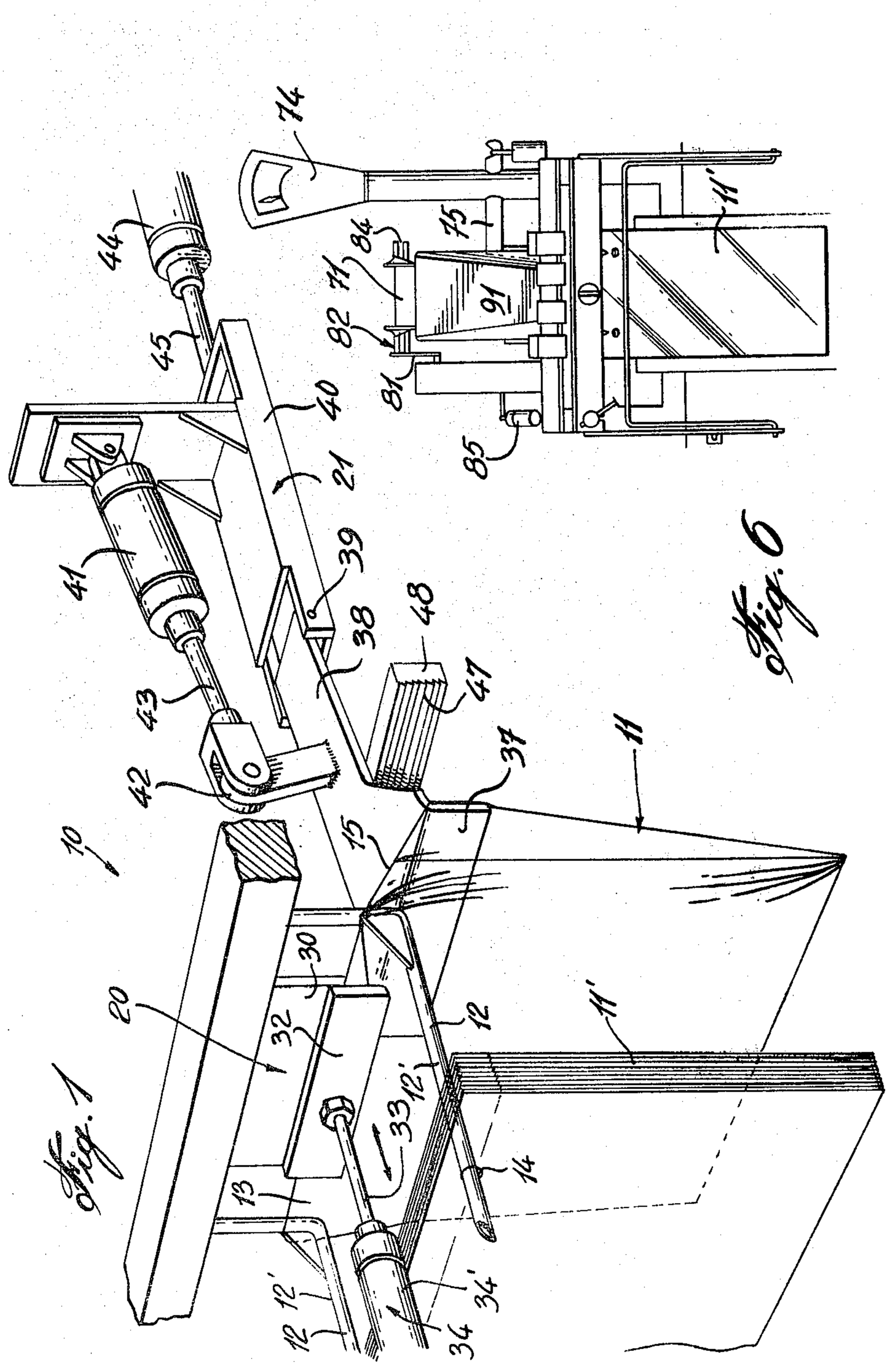
Attorney, Agent, or Firm—Guy J. Houle; Alan Swabey; Robert E. Mitchell

[57] **ABSTRACT**

An automatic weighing and bagging machine and method for holding and opening a first bag of a plurality of juxtaposed bags held in the machine in a manner whereby the first bag may be filled with a weighed product and released from the plurality of bags. The bags are of the type having an extended tab secured to a portion thereof and extending above a mouth opening of the bag. The machine comprises a holding device for engaging at least a portion of the extended tab of the first bag. A retractor member is also provided for opening the mouth opening of the first bag by pulling a side wall portion of the first bag opposite to the engaged portion of the tab and away from the engaged tab. The retractor member also clamps the side wall portion to hold the bag in an open position whereby the bag is held from opposed sides for filling the bag with the weighed product. A container is provided to hold and weigh the product to be bagged. A discharge mechanism displaces the weighed product from the container to the open mouth of the first bag to place the product therein. A sensor to detect the delivery of the weighed product to the first bag is provided. An actuating system is also provided for releasing the holding means and clamping means to cause the first bag with the weighed product to be released.

19 Claims, 7 Drawing Figures

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12
11'
12'
33
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34'
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34
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11
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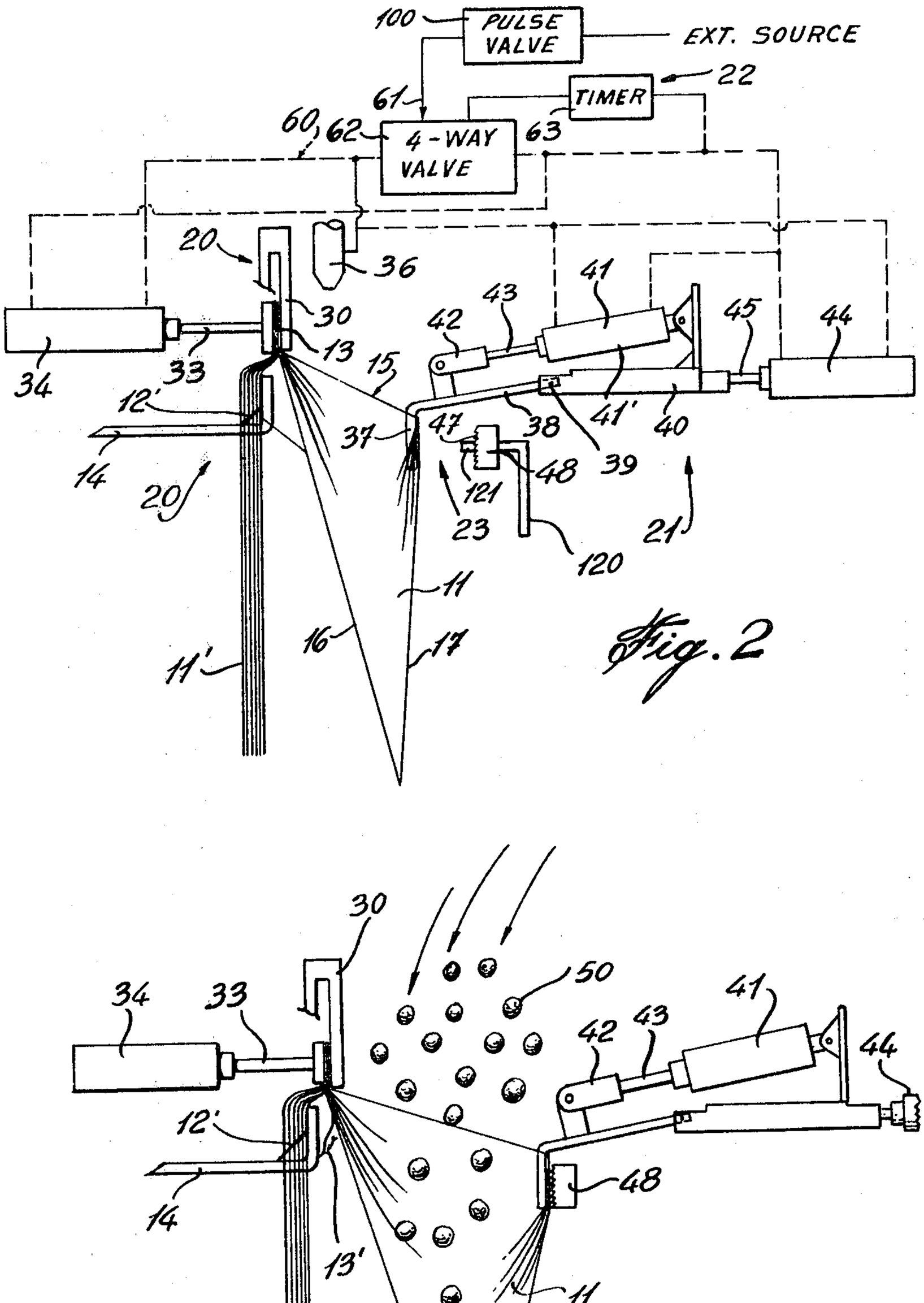
91
81
85

Fig. 6

Fig. 1


100
PULSE VALVE
EXT. SOURCE
22
TIMER
61
60
62
4-WAY VALVE
63
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36
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43
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13
15
33
34
12'
37
47
38
41'
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39
48
14
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121
23
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120
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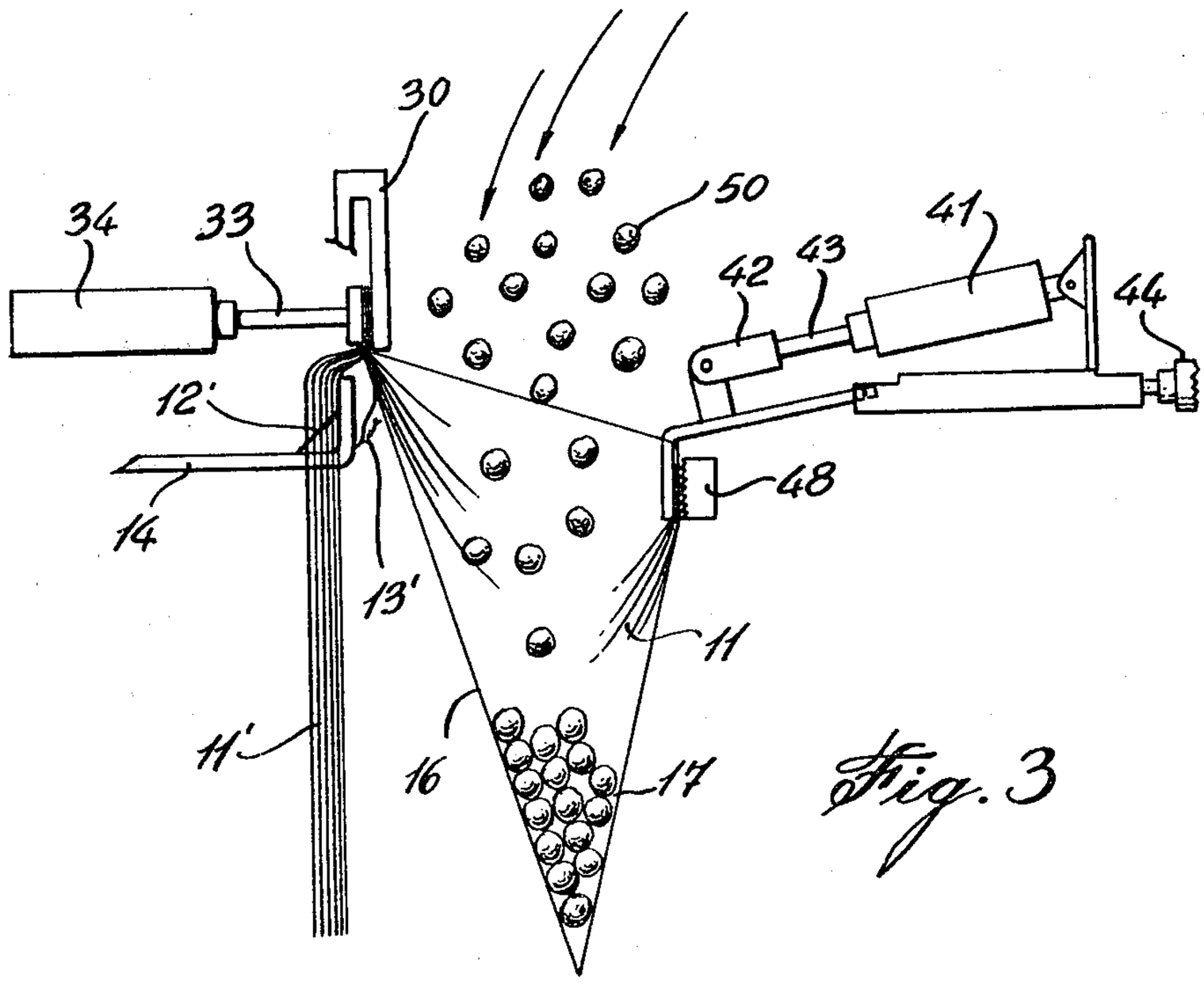
11'
16
17

Fig. 2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48
14
13'
11
11'
16
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Fig. 3

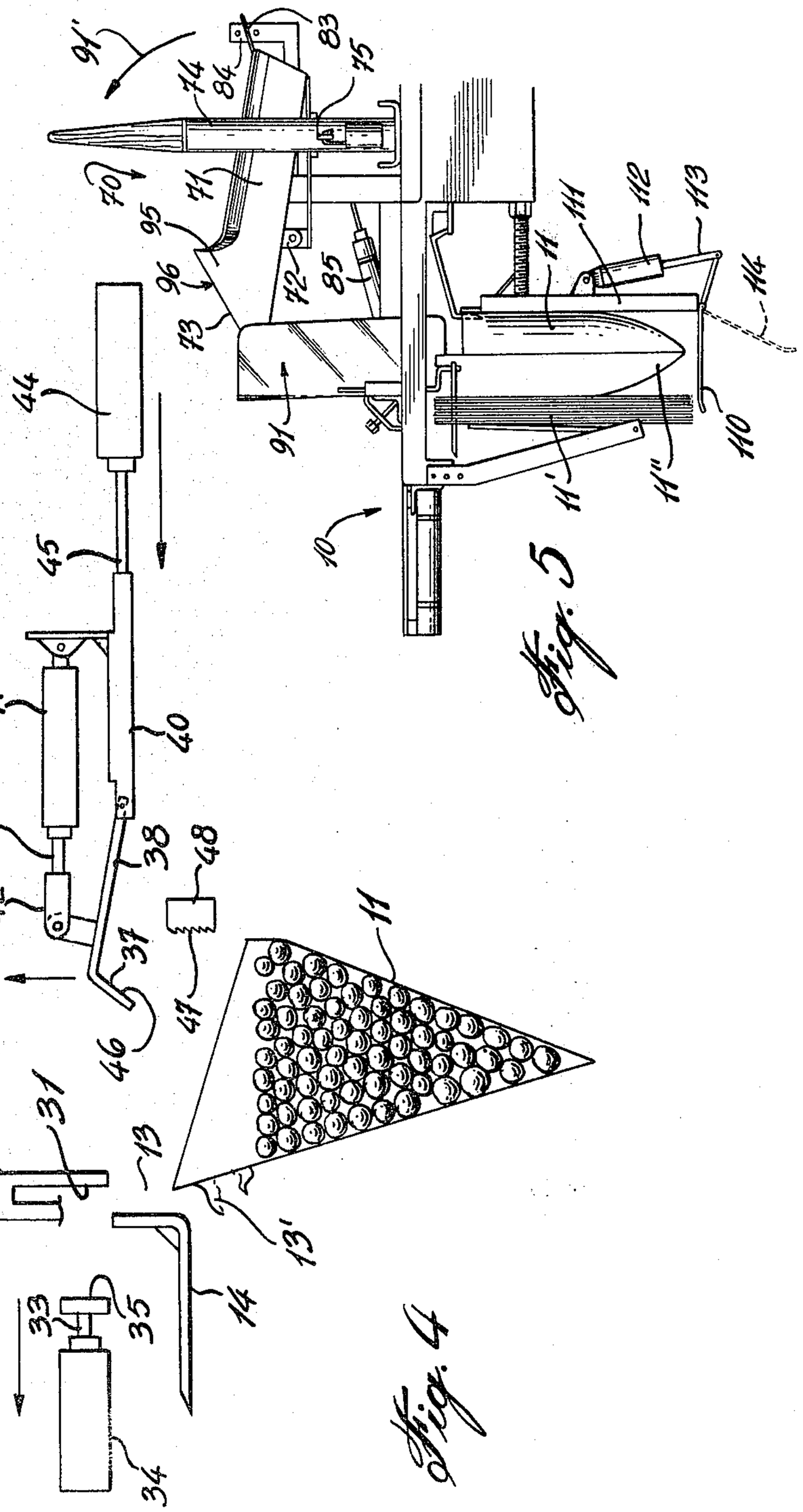
91'
74
84
83
75
70
71
95
96
73
72
85
91
44
45
41
43
42
40
38
48
37
46
47
10
11
111
112
113
114
110
11'
11"
30
31
13
13'
14
33
35
34

Fig. 5

Fig. 4

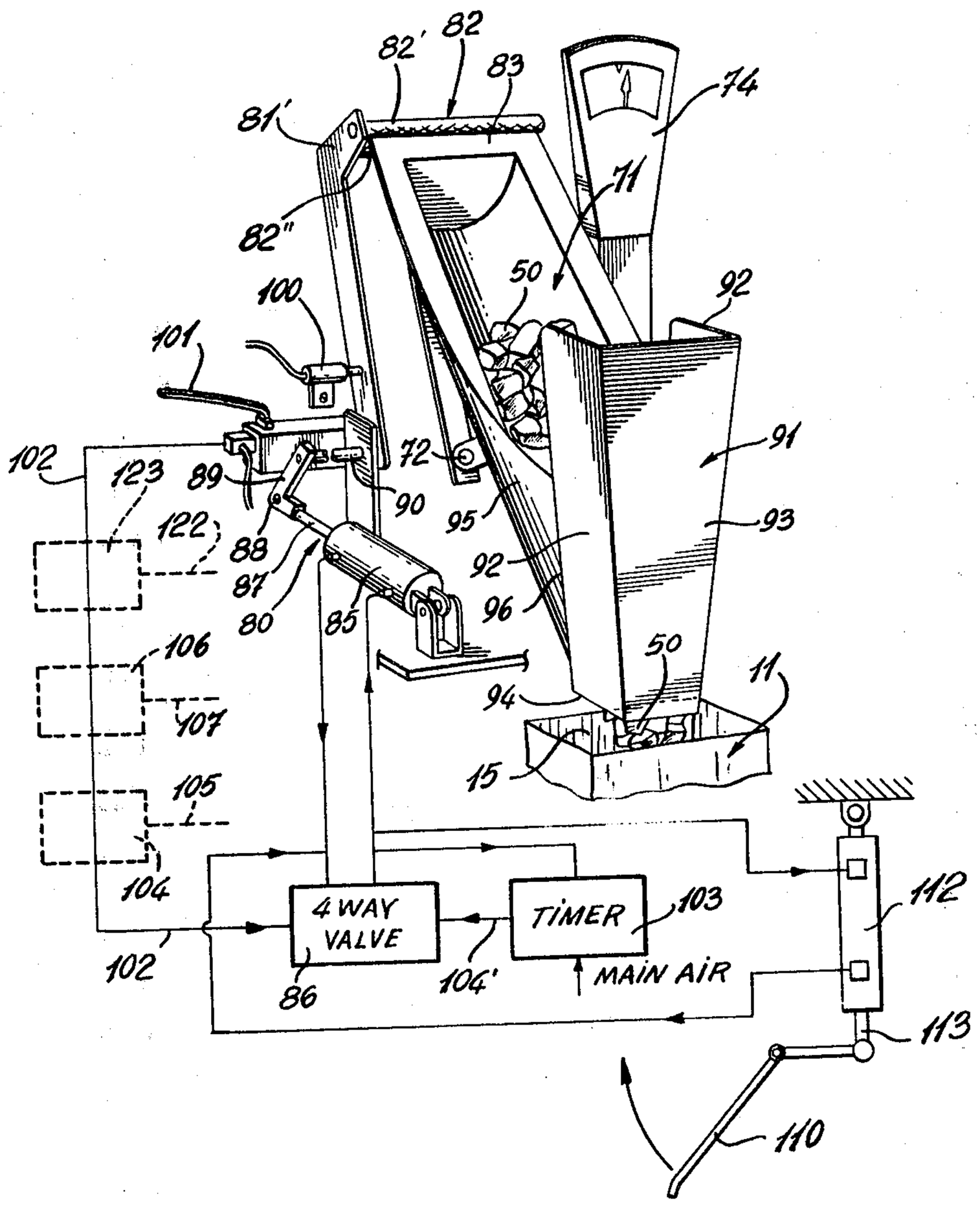
82'
82
83
74
81'
82"
71
50
92
100
101
102
123
89
72
91
90
95
93
122
88
87
92
80
85
96
106
50
94
11
107
15
105
104
4 WAY VALVE
TIMER
103
112
102
86
104'
MAIN AIR
113
110

Fig. 7

AUTOMATIC WEIGHING AND BAGGING MACHINE

This invention is a continuation-in-part of my patent application Ser. No. 852,678 filed on Nov. 18, 1977, now U.S. Pat. No. 4,172,349.

BACKGROUND OF INVENTION

(a) Field of the Invention

The present invention relates to an automatic weighing and bagging machine and the method of operation thereof, and more particularly, to a machine capable of weighing a product and inserting it into an open mouth of a first bag of a plurality of bags and releasing the filled bag.

(b) Description of the Prior Art

Bagging machines for holding, transporting, filling and sealing plastic bags are well known such as disclosed in applicant's own U.S. Pat. No. 3,946,538 issued on Mar. 30, 1976 and other prior art, for example, U.S. Pat. No. 3,731,454 issued to Ag-Pak Inc. on May 8, 1973. Such prior art is of the type where a first bag of a plurality of juxtaposed bags is engaged by clamping means and transported by the clamping means for filling and sealing the bag. Such prior art devices are fairly complex in construction due to the various clamping arms required to be activated and the displacement of the clamping mechanisms.

There exists the need for a simple, uncomplicated automatic weighing and bagging machine where a product to be bagged is weighed and delivered automatically to an open bag and then released for transportation by other means to a bag closing station.

SUMMARY OF INVENTION

It is a feature of the present invention to provide an automatic weighing and bagging machine which will supply this need.

According to a further feature of the present invention, there is provided an automatic weighing and bagging machine which is capable of holding a first bag of a plurality of juxtaposed bags in an open position before displacing said first bag from its juxtaposed position whereby the bag is filled with a weighed product and detached before releasing it so that the bag can be filled with light products and does not depend on its weight to detach itself from the means holding it juxtaposed.

It is a further feature of the present invention to provide an automatic weighing and bagging machine having a weighing bucket where a predetermined quantity of product weight is determined and the weighed product is directed to an open mouth of a bag and sensing the delivery of the product to initiate a second weighing operation.

A further feature of the present invention is to provide a method of weighing and bagging the weighed product in an open first bag of a plurality of juxtaposed bags to permit filling the first bag in its juxtaposed position and releasing the first filled bag so that the bag will be released from its juxtaposed position and fall by gravity.

According to the above features, from a broad aspect, the present invention provides an automatic weighing and bagging machine for placing a weighed product in a first bag of a plurality of juxtaposed bags held in said machine, said bags each having an extended tab secured to a portion thereof, said tab extending above a mouth opening of said bag, said machine comprising retaining means for supporting said plurality of bags in juxtaposition, holding means for engaging at least a portion of said extended tab of said first bag, bag opening means for opening said mouth opening of said first bag by pulling a side wall portion of said first bag, opposite to said engaged portion of said tab, away from said engaged tab, clamping means associated with said bag opening means for clamping said side wall portion to hold said bag in an open position whereby said bag is held from opposed sides, container weighing means for holding and weighing a product to be bagged, discharge means for displacing said weighed product from said container weighing means to said open mouth of said first bag to place said weighed product in said first bag, sensing means to detect the delivery of said weighed product to said first bag, and actuating means for releasing said holding means and clamping means to cause said first bag with said weighed product to be released from said machine due to its own weight.

According to a further broad aspect of the present invention, there is provided a method of weighing and bagging a product in a first bag of a plurality of juxtaposed bags, each said bag having a tab extending above a mouth opening of said bag, said method comprising the steps of: (i) retaining a plurality of said bags in juxtaposition by retaining means, (ii) engaging a portion of said extended tab of said first bag while maintaining said first bag juxtaposed with said plurality of bags, (iii) opening and pulling a side wall portion of said first bag, opposite to said engaged portion of said tab, away from said engaged tab and clamping said side wall portion to hold said bag from opposed sides, (iv) placing a predetermined quantity of said product in a weigh bucket, (v) tipping said bucket to discharge said weighed product in the mouth opening of said first bag, (vi) sensing the discharge of said weighed product, and (vii) releasing said engaging portion of said extended tab prior to releasing said bag filled with said weighed product.

BRIEF DESCRIPTION OF DRAWINGS

A preferred embodiment of the present invention will now be described with reference to the accompanying drawings in which:

FIG. **1** is a perspective view, partly fragmented, illustrating an example of the essential parts of the bagging machine to be used in combination with a weighing container of the present invention;

FIG. **2** is a schematic view illustrating the operation of the bagging machine of the present invention during opening of a bag;

FIG. **3** is a further schematic view illustrating a further step in the operation of the bagging machine where a weighed product is inserted into a first open bag;

FIG. **4** is a still further schematic view illustrating a further step in the operation where the filled bag is released;

FIG. **5** is a side view showing the weighing and bagging machine combination;

FIG. **6** (which appears on the sheet with FIG. **1**) is a front view of FIG. **5**; and

FIG. **7** is a composite perspective view of the weighing bucket assembly and schematic illustration of the pneumatic circuit and support platform.

DESCRIPTION OF PREFERRED EMBODIMENTS

Referring now to the drawings, there is shown generally at **10**, the essential parts of the automatic bagging machine for holding and opening a first bag **11** of a plurality of juxtaposed bags **11'** held in the machine by wicket pins **12**. Each of the bags **11** has an extended tab **13** provided with two spaced apart holes **14** therein whereby the bags are slidingly retained on the wicket pins **12**. Each bag is also provided with a mouth opening **15** defined between a bag rear wall **16** and a bag front wall **17**, see FIG. **2**.

The machine comprises generally holding means **20** for engaging at least a portion of the extended tab **13** of a first bag **11**, a bag opening means **21** for opening the mouth opening **15** of the first bag by pulling a side wall portion, herein the front wall **17**, of the first bag away from the engaged tab **13**, and actuating means **22** for causing the holding means **20** and clamping means **23**, associated with the bag opening means **21**, to release the first bag **11**.

The holding means **20** is constituted by a stationary clamp **30** having a clamping surface **31** positioned in front of the extended tab **13** of the first bag **11**. A displaceable clamp **32** is secured to the free end of a piston rod **33** of piston **34**. The clamping surface **35** of the displaceable clamp **32** is positioned in alignment with the clamping surface **31** of the stationary clamp **30** whereby all of the extended flaps **13** are held compressed between the clamping surfaces **31** and **35** when the piston rod **33** is displaced outwardly from the piston cylinder **34'**.

The bag opening means **21** comprises an air jet **36** which is positioned adjacent the mouth opening **15** of the bag whereby to direct a jet of air in the mouth opening after the extended tab **13** is engaged by the holding means **20** whereby to cause the bag to open and to permit the insert end portion **37** of a retractor member **38** to be positioned within the opening **15**.

The retractor member **38** is hinged at **39** to a movable frame **40** and is displaceable arcuately in an up and down direction on the hinge connection **39** by a piston **41** mounted at a downward angle with respect to the frame **40** and having its rod end **42** secured to the retractor member **38**. By extending the piston rod **43**, in and out of the cylinder **41'** of piston **41**, the retractor member will be displaced in an arcuate up and down manner.

A further piston **44** is secured to the movable frame **40** whereby to displace the frame **40** towards and away from the first bag of the plurality of bags **11'**. During a first stroke, the piston rod **43** is in a retracted position and the piston **44** is extended towards the first bag **11**. During the second stroke, the piston **41** is actuated to extend the piston rod **43** and simultaneously the piston **44** retracts its piston rod **45** whereby the insert end portion **37** goes into the mouth opening and pulls the front wall **17** away from the rear wall **16** until a top portion of the front wall **17** is clamped between a clamping surface **46** of the insert end portion **37** and a clamping surface **47** of a stationary clamp **48**. As the front wall **17** is pulled away from the rear wall **16**, the extended tab **13** will disconnect from the wicket pins **12**, as shown at **13'** in FIGS. **3** and **4**. To facilitate disconnection, a razor edge **12'** is provided along the top of the pins **12**. Such disconnection is desirable when bagging very light products. However, the disconnection can be effected by the weight of the product inserted into the bag at either the insertion stage or the bag release stage of the cycle.

As shown in FIG. **3**, when the extended tab **13** is clamped as well as a portion of the front wall **17**, the bag **11** is held from opposite sides and ready to receive a product **50** therein. While the insert end portion **37** was pulling the front wall **17** of the bag **11**, the extended tab **13** ripped itself free from the wicket pins **12**, as mentioned above. After a predetermined quantity or weight of the product **50** is inserted within the bag **11**, the pistons **34**, **41**, and **44** are again activated to perform a release stroke, as shown in FIG. **4**, with the piston **34** retracting its piston rod and, therefore, releasing the extended tab **13** and simultaneously the piston **41** retracting its piston rod thereby causing the retractor member to move upwardly with a simultaneous operation of piston **44** causing its piston rod **45** to move outwardly to cause release of the engaged top portion of the front wall **17** of the bag **11**. Thus, the bag is free to fall by gravity, no matter how light its content.

The pneumatic system for operating the pistons is schematically illustrated at **60**. The system comprises an external source of pressure (not shown) connected to an input **61** of a four-way valve **62** (main pneumatic valve). All of the pistons are two-stroke (double-acting) pistons and in one stroke of the operation, as illustrated in FIGS. **2** and **3**, piston **34** moves against the extended tabs **13** to apply pressure to retain the first bag **11**. Previously, the air jet **36** was activated whereby to cause the front wall **17** of the first bag **11** to move away from the rear wall **16**. While the piston **34** clamps the tabs **13**, the cylinder **41** is activated, causing the insert end portion **37** of the retractor member **38** to move within the mouth opening while piston **44** is activated to pull back the movable frame **40** to a position where the clamping surface **46** of the insert **37** clamps a top portion of the front wall **17** of the bag **11** between it and a clamping surface **47** of the stationary clamp **48**. Thus, the bag is now positively held from opposed sides and ready to receive a weighed product **50** therein. The weighing mechanism and delivery of the weighed product will be described later. A timer **63** is connected in the circuit to provide a suitable time delay for the blowing open the bag **11** prior to activating the second cycle of the pneumatic system.

FIG. **4** illustrates a second cycle of operation of the system wherein the piston **34** is activated in the opposed direction to cause retraction of its piston rod to release the extended tab **13**. Simultaneously, the piston **44** is activated to move its piston rod **45** outwardly whilst the piston **41** is activated to retract its piston rod simultaneously causing the retractor member **38** to move upwardly and forwardly as indicated by the arrows. This will release all engagement with the bag **11** which will rip itself from the wicket pins **14**, if not already detached, and fall by gravity on conveying means (not shown) positioned below the bag **11**.

Referring now to FIGS. **5**, **6** and **7**, there is shown the weighing mechanism associated with the bagging machine **10**. The weighing mechanism is generally indicated by reference numeral **70** and comprises a container weighing means **71** for holding and weighing the product **50** to be bagged. The weighing mechanism **70** comprises a container weighing means, herein a weigh bucket **71**, having a pivotal attachment **72** whereby the bucket **71** may be tipped forwardly to release product through a discharge mount **73** thereof. A weigh scale **74** is coupled to the weigh bucket **71** through a balance

arm **75** whereby the product in the bucket **71** may be weighed.

In order to discharge the product from the bucket **71**, there is provided a discharge means in the form of a tipping mechanism **80** which comprises a piston activated linkage including a tipping arm **81** having a bucket engaging means **82** to releasably engage with the bucket **71** to cause the bucket pivotal displacement and adapt it to release the bucket (not being in engagement therewith), during the weighing operation not to affect the weight of the product being weighed.

The bucket engaging means constituted a releasably engageable guide member to displace an engageable element, herein a rear flange **83** of the bucket **71**, in an arcuate path about the pivotal attachment **72**. As the bucket **71** is pivoted, the product **50** therein will slide out of the discharge mouth **73** in the front portion of the bucket. The bucket engaging means **82** is herein constituted by two spaced apart fingers **82'** and **82''** which define a gap **84** therebetween with the rear flange **83** extending in the gap intermediate the spaced apart fingers **82'** and **82''** when the bucket is in a weighing position, as shown in FIG. **5**. The fingers **82'** and **82''** are secured to the top end **81'** of the tipping arm **81** which is arcuately displaced from a bucket weighing position, as shown in FIG. **1**, to a bucket discharging position, as shown in FIG. **7**, by a tipping air cylinder **85**. The cylinder **85** is operable through a control valve means, herein the four-way control valve **86**.

The tipping air cylinder **85** has a cylinder rod **87** having its rod end **88** connected to a link arm **89** which is connected through pivot **90** to the tipping arm **81**. With the piston rod **87** fully extended, as shown in FIG. **7**, the tipping arm **81** is displaced arcuately upwards in the direction of arrow **91** to place the bucket **71** in its discharge position. When the piston rod **87** is retracted, the tipping arm **81** is positioned substantially horizontally, as shown in FIG. **5**, and the bucket is in its weighing position.

In order to direct the weighed product **50** in the open mouth **15** of a first bag **11** of the plurality of juxtaposed bags, there is provided a guide funnel **91** secured forwardly of the bucket **71** and above the mouth opening **15** of the first bag **11**. The funnel **91** has a downwardly tapering U-shaped cross-section having an open side wall, facing the bucket **71**, opposed side end walls **92**, a rear wall **93**, and an open bottom end **94**. The bucket **71** is formed with a guide flange **95** on opposed sides of its discharge mouth **73**. Each guide flange tapers forwardly at a top edge **96** whereby the top edge will be aligned with the edge of the opposed side end walls of the funnel **91** when the bucket **71** is in its discharge position as shown in FIG. **7**. Thus, the guide flange **95** in combination with the guide funnel **91** constitutes a funnel with a closed side wall whereby all of the weighed product **50** will be confined and directed to the open bottom end **94** of the funnel to be discharged in the open end **15** of the bag **11**.

Referring now to FIGS. **7** and **2**, there is shown a sensing means, herein a position sensing switch constituted by a pulse valve **100** to detect the delivery of the weighed product **50** to the first bag **11**. The pulse valve **100** is secured to the machine frame at a position where is tipping arm **81** will reset the valve when the bucket **71** is in its discharge position. As shown in FIG. **2**, the pulse valve **100** is connected to the main pneumatic four-way valve **62** of the actuating means of the bagging machine to cause the bagging machine to go through a complete bag opening cycle when the pulse valve is released from engagement by the tipping arm **81**, that is, when the bucket is returned to its weighing position. Thus, when the bucket is in its weighing position, the first bag **11** is opened to await the discharge of the weighed articles therein and the next bag opening cycle will be disabled until the product has been released in the bag and the bucket is returned to its weighing position.

In order to cause activation of the tipping mechanism to place the bucket in its discharge position, as shown in FIG. **7**, there is provided a discharge switch valve **101** which may be manually operated or automatically operated by a weight sensing device (not shown) associated with the weigh scale **74**. The discharge switch **101** is connected to the control valve **86** via air line **102**. A timer **103** is also connected to an input connection **104** of the control valve **86** to hold the bucket **71** at its discharge position for a predetermined period of time before it permits the control valve **86** to return the bucket **71** to its loading or weighing position.

A first shut-off valve **104** may be connected in the air line **102** to prevent the discharge switch **101** to signal the control valve **86** if the weight of the product in the bucket **71** is under a desired value. This first shut-off valve would receive a signal at its input **105** from a weight sensing device (not shown) associated with the weigh scale **74**. A second shut-off valve **106** may also be connected in the air line **102** to stop the operation of the bucket tipping mechanism when a main conveyor (not shown) of the bagging machine is stopped whereby bagged products are not delivered one on top of the other. The second shut-off valve could also be operated if it is necessary to release a filled bag at a delayed moment to prevent releasing bags one on top of the other. Thus, a sensor (not shown) would detect the presence of a bag already on a main conveyor (not shown) and positioned under the filled bag. Such sensor would be connected to the input connection **107**.

As shown in FIGS. **5** and **7**, a bag support platform **110** may be displaceably connected under the first bag **11** to a frame **111**. The platform **110** is provided to support a bottom **11''** of the first bag **11** when the weighed product is discharged therein, particularly if the product is heavy, such as when bagging carrots or the like produce or other heavy articles. The platform **110** is activated by a platform cylinder **112** which causes the platform **110** to be displaced under the bag (as shown in solid lines in FIG. **5**) when the tipping cylinder **85** of the tipping mechanism is activated to tip the bucket **71**. When the piston rod **87** of the cylinder **85** is retracted, the piston rod **113** of the piston **112** is also retracted causing the platform to be retracted to its release position as shown by phantom line **114**, in FIG. **5**, to release the filled bag **11**. FIG. **7** shows the pneumatic connection of the platform cylinder **112** in the pneumatic system.

Referring again to FIGS. **2** and **7**, there is shown a first bag sensor element **120** to detect the presence of a first bag **11** in its proper position to receive the weighed product. As herein shown, the sensor **120** is an air jet having a sensing open end **121** extending forwardly of the clamping face **47** whereby a portion of the wall **17** of the bag **11** will be retained thereagainst to cut off the air flow out of the sensor, thereby detecting the proper position of the bag. Other sensing means of electrical or mechanical design may also be provided to serve the same purpose. The sensor **120** is connected to the input

122 of a bag sensing shut-off valve **123** which would be secured in the air line **102**. The shut-off valve **123** prevents the discharge switch **101** to signal the control valve **86** in the absence of a first bag **11** at a proper receiving position with the mouth thereof being opened.

Although the automatic weighing mechanism is herein disclosed in combination with my bagging device of my afore-mentioned patent application and slightly modified, it is foreseen that it can also be adapted to other bagging machines provided they are capable of holding an openmouth bag to receive the weighed product from the discharge mouth of the weigh bucket. Also, it is within the ambit of the present invention to provide a method of weighing the product which is fully automated whereby the product may be automatically delivered to the bucket and the delivery rate stopped automatically with the discharge being also effected automatically, as described herein above. The pneumatic system with its shut-off valve adaptations, as disclosed above, would provide all the necessary surveyance and command signals to control the operation of the weighing mechanism in combination with a bagging machine.

Furthermore, the bags are not restricted to those of the type having holes in the tab to be supported on wicket pins. The holding means **20** could be constituted by having further side clamps which could engage the extended tab on opposed sides of the clamps **30** and **32** and work in reverse to the clamps **30** and **32** whereby to hold the juxtaposed bags **11'** while the bag is being filled and released. When the clamps **30** and **32** are engaged, the side clamps would be disengaged to permit the portions of the tab extending beyond opposed side edges to the clamps **30** and **32** to bend around these and clear the side clamps. Thus, when the filled bag is released by clamps **30** and **32**, the remaining juxtaposed bags are held clamped by the side clamps.

I claim:

1. An automatic weighing and bagging machine for placing a weighed product in a first bag of a plurality of juxtaposed bags held in said machine, said bags each having an extended tab secured to a portion thereof, said tab extending above a mouth opening of said bag, said machine comprising retaining means for supporting said plurality of bags in juxtaposition, bag opening means for opening said mouth opening of said first bag, clamping means associated with said bag opening means for holding said bag in an open position by clamping said bag from opposed sides thereof, a weigh bucket for holding and weighing a product to be bagged, a weigh scale coupled to said weigh bucket for weighing said product to be bagged, discharge means for displacing said weighed product from said container weighing means to said open mouth of said first bag to place said weighed product in said first bag, said discharge means being a tipping mechanism for displacing said bucket on a pivotal attachment for discharging said weighed product therein into said first bag, said tipping mechanism having a piston activated linkage having bucket engaging means releasably engageable with said bucket for causing said bucket pivotal displacement and to release said bucket for weighing said product therein, sensing means to detect the delivery of said weighed product to said first bag, said sensing means being operable by said tipping mechanism when said bucket is displaced to its discharge position to reset said sensing means, said sensing means being a sensing switch connected to a main pneumatic valve of said actuating means to cause said bagging machine to go through a complete bag opening cycle when said switch is released from said tipping mechanism when said bucket is returned to a loading-/weighing position, and actuating means for releasing said holding means and clamping means to cause said first bag with said weighed product to be released from said machine due to its own weight.

2. An automatic weighing and bagging machine as claimed in claim **1** wherein said bucket has an engageable element, said bucket engaging means being a releasably engageable guide member to engage and displace said engageable element in an arcuate path about said pivotal attachment to tip said bucket whereby said product therein will slide out at a discharge end and be directed in said first bag.

3. An automatic weighing and bagging machine as claimed in claim **2** wherein said engageable element is a rear flange of said bucket, said guide member comprising two spaced apart fingers defining a gap therebetween, said rear flange extending in said gap intermediate said spaced apart fingers when said bucket is at a weighing position, said fingers being secured to an arcuate displaceable link arm to tip said bucket.

4. An automatic weighing and bagging machine as claimed in claim **3** wherein said link arm is actuated by a tipping air cylinder operable through a control valve means.

5. An automatic weighing and bagging machine as claimed in claim **3** wherein a guide funnel is secured forwardly of said bucket above said mouth opening of said first bag, said funnel being of downwardly tapering U-shaped cross-section having an open side wall facing said bucket discharge end, opposed side end walls, a rear wall, and an open bottom end.

6. An automatic weighing and bagging machine as claimed in claim **5** wherein said bucket has a guide flange on each opposed side of said discharge end, each guide flange tapering forwardly at a top edge; said bucket, when in a discharge position, said guide flanges being aligned with said funnel opposed side end walls to constitute with said funnel rear wall a closed side wall funnel.

7. An automatic weighing and bagging machine as claimed in claim **1** wherein there is provided a discharge switch, said tipping mechanism being a linkage connected to a piston rod end of a tipping cylinder, said piston rod end being actuable by a control valve, said discharge switch being connected to said control valve to cause said bucket to move to its discharge position.

8. An automatic weighing and bagging machine as claimed in claim **7** wherein a timer is connected to said control valve to hold said bucket at said discharge position for a predetermined period of time before causing displacement of said piston rod end to return said bucket to its loading position.

9. An automatic weighing and bagging machine as claimed in claim **8** wherein said discharge switch is automatically activated by a weight sensing device of said weigh scale.

10. An automatic weighing and bagging machine as claimed in claim **7** wherein said discharge switch is a pneumatic switch having an air line connected to said control valve, a first shut-off valve connected in said air line to prevent said discharge switch to signal said control valve if said weight of said product in said bucket is under a desired value.

11. An automatic weighing and bagging machine as claimed in claim 1 wherein there is further provided a bag support platform displaceable under said first bag to support a bottom of said first bag when said weighed product is discharged therein.

12. An automatic weighing and bagging machine as claimed in claim 11 wherein said support platform is activated by a platform cylinder, said platform cylinder displacing said platform under said first bag when a tipping cylinder of said tipping mechanism is activated to tip said bucket.

13. An automatic weighing and bagging machine as claimed in claim 10 wherein a second shut-off valve is connected in said air line to stop the operation of said bucket tipping mechanism when a main conveyor of said bagging machine is stopped or when a filled bag is to be released at a delayed moment.

14. An automatic weighing and bagging machine as claimed in claim 1 wherein there is further provided a first bag sensor to detect the presence of said first bag in its position to receive said weighed product.

15. An automatic weighing and bagging machine as claimed in claim 14 wherein said bag sensor is connected to said tipping mechanism to prevent operation of said tipping mechanism when the absence of said first bag is detected.

16. An automatic weighing and bagging machine as claimed in claim 10 wherein there is further provided a bag sensing shut-off valve in said air line, a first bag sensor connected to said bag sensing shut-off valve to prevent said discharge switch to signal said control valve in the absence of said first bag at a receiving position.

17. An automatic weighing machine comprising a weigh bucket having a pivotal attachment, a weigh scale coupled to said weigh bucket for weighing a product to be bagged, a tipping mechanism for displacing said bucket on said pivotal attachment for discharging said weighed product therein into the open mouth of a first bag to be filled, sensing means to detect the delivery of said weighed product to said bag, said tipping mechanism having a piston activated linkage having bucket engaging means releasably engageable with said bucket for causing said bucket pivotal displacement and to release said bucket for weighing said product therein, said bucket having an engageable element, said bucket engaging means being a releasably engageable guide member to engage and displace said engageable element in an arcuate path about said pivotal attachment to tip said bucket whereby said product therein will slide out at a discharge end and be directed in said first bag, said engageable element being a rear flange of said bucket, said guide member comprising two spaced apart fingers defining a gap therebetween, said rear flange extending in said gap intermediate said spaced apart fingers when said bucket is at a weighing position, said fingers being secured to an arcuate displaceable link arm to tip said bucket.

18. An automatic weighing and bagging machine for placing a weighed product in a first bag of a plurality of juxtaposed bags held in said machine, said bags each having an extended tab secured to a portion thereof, said tab extending above a mouth opening of said bag, said machine comprising retaining means for supporting said plurality of bags in juxtaposition, bag opening means for opening said mouth opening of said first bag, clamping means associated with said bag opening means for holding said bag in an open position by clamping said bag from opposed sides thereof, a weigh bucket for holding and weighing a product to be bagged, a weigh scale coupled to said weigh bucket for weighing said product to be bagged, discharge means for displacing said weighed product from said container weighing means to said open mouth of said first bag to place said weighed product in said first bag, sensing means to detect the delivery of said weighed product to said first bag, said discharge means being a tipping mechanism for displacing said bucket on a pivotal attachment for discharging said weighed product therein into said first bag, a discharge switch connected to a control valve to cause said bucket to move to its discharge position, said discharge switch being a pneumatic switch having an air line connected to said control valve, a first shut-off valve connected in said air line to prevent said discharge switch to signal said control valve if said weight of said product in said bucket is under a desired value, a bag sensing shut-off valve in said air line, a first bag sensor connected to said bag sensing shut-off valve to prevent said discharge switch to signal said control valve in the absence of said first bag at a receiving position, and actuating means for releasing said holding means and clamping means to cause said first bag with said weighed product to be released from said machine due to its own weight.

19. An automatic weighing and bagging machine as claimed in claim 1 or 18 wherein there is provided holding means for engaging at least a portion of said extended tab of said first bag, said bag opening means pulling a side wall portion of said first bag opposite to said engaged portion of said tab away from said engaged tab, said clamping means clamping said side wall portion to hold said bag in said open position.

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